

Summary of Experience

Strong teaching, industry, and service (department, university, and community) experience in an innovative architectural and engineering environment. Long and diverse teaching experience, taught classes in seven different universities: Prairie View A&M University (PVAMU), University of Houston-Downtown (UHD), The University of Texas at Tyler (UTTyler), University of Houston (UH-Main Campus), Texas Southern University (TSU), Louisiana State University (LSU), and Virginia Tech (VT). Worked in four different multinational engineering companies: McDermott International, Inc., Genesis Oil and Gas (Technip USA Inc.), Akij Cement Company, and Shahjibazar Gas Turbine Power Plant. A licensed professional engineer (PE) from two states (Texas and Louisiana). Participated in design reviews, blueprint reading, suggest and support design best practices. Skilled in technical project management, Reliability Engineering, Maintenance and Troubleshooting, Manufacturing, Technical Writing, Customer Relations, Business Communications, GD&T, design and fabrication, common machining practices, 3D solid modeling CAD systems and high-precision, safety critical parts.

Education

- Doctor of Philosophy (Ph.D.) in Engineering Science, 2010, LSU (Louisiana State University), Baton Rouge, Louisiana,
- Master of Engineering (M.Eng.) in Mechanical Engineering, 2007, VT (Virginia Tech), Blacksburg, Virginia
- Master of Science (M.S.) in Mechanical Engineering, 2005, LSU (Louisiana State University), Baton Rouge, Louisiana,
- Bachelor of Science (B.S.) in Mechanical Engineering, 2001, BUET (Bangladesh University of Engineering & Technology), Dhaka, Bangladesh,

Registration

- Professional Engineer (PE), State of Texas and Louisiana,

Teaching and Industry Experience

Adjunct Instructor, **Prairie View A&M University (PVAMU)**

Fall 2019-Present @ Prairie View, TX

- **Materials & Methods-I (Arch-2273):** Introduction to the properties and uses of natural and manufactured building materials and the effect of the nature of materials upon design.
- **Materials & Methods-II (Arch-3283):** Further knowledge of the properties and uses of natural and manufactured building materials and the effect of the nature of materials upon design, building construction materials and methods used in systems.

Lecturer, **University of Houston-Downtown (UHD)**

Fall 2018-Present @ Houston, TX

- **Systems Safety Management (ENGR-4330):** To identifying and assessing system safety management - emphasizes management leadership and employee involvement, management of change and the procurement process, macro thinking, culture change agents, Prevention through Design, along with avoidance of Human Error.
- **Industrial Loss Prevention (ENGR-4350):** Human Error; Storage Tanks and Stacks; Leaks and Liquefied Flammable Gases; Pressure Vessels; Static Electricity; Computer Control, Plant Layout and Siting; Hazard Identification; and Inherently Safer Design.
- **Offshore Fire & Safety Inspection (Engr-3346):** To identifying and assessing Offshore Fire Safety and Inspection – emphasizing Fire Prevention and Protection, Management Leadership and Employee Involvement, Occupational Safety Management, Safety Culture and Prevention through Design in Offshore Fire Safety and Inspection.
- **Emergency Management & Planning (Engr-3352):** Addresses emergency planning and management from a facility level. Provides a basis for systematically identifying and evaluating the hazards that create the potential for disaster, along with guidelines for mitigating and minimizing the impact of those events.
- **Accident Investigation and Root Cause Analysis (ENGR-3351):** Study of integrating accident or near miss investigations as an effective, practical, and even a profitable, management tool. Incorporates systematic, procedural, determinative, and corrective applications for investigative accident management.
- **Radiation Safety (ENGR-3375):** A study of radiation safety, including concepts of risk assessment, response objectives, safety officer programs, case studies, lessons learned, dose calculations, metering techniques, and radiation protection guidelines.
- **Process Modeling and Simulation (Engr-3410):** An introduction to material and energy balances in engineering applications, including chemical, environmental and biological systems. Engineering problem solving, the equilibrium concept, first law of thermodynamics. Use of computer based tools to simulate process behavior.
- **Modern Methods of Engineering Analysis (ENGR-2411):** The course presents classical and modern methods of analysis, including calculus, with application to engineering problems. Extensive use of practical problems illustrates the different methods of engineering analysis.

- **Engineering Economics (ENGR-3302):** Time value of money, annual cost, present worth, future value, capitalized cost, break-even analysis, valuation and depreciation, income taxes. Economic evaluation of engineering alternatives and proposals. Use of spreadsheets. Introduction to optimization.

Adjunct Faculty, **University of Houston (UH)**

Summer 2017-Fall 2017 @ Houston, TX

- **Engineering Graphics (MECT-1330):** Computer-aided drafting (CAD), sketching to generate 2- and 3-D drawings based on the conventions of engineering graphical communication. Solidworks topics covered in this course include an introduction to Solidworks features, starting and setting up drawings, point coordinate entry methods, creation of 2D and 3D objects, snap modes, editing geometry, and display control.

Adjunct Faculty, **The University of Texas at Tyler (UTTyler)**

Summer 2017-Present @ Houston, TX

- **Heat Transfer (MENG 3316):** Both in class and online settings. Fundamentals and applications of conduction, convection, and radiation heat transfer. Analysis of steady-state and transient conduction employing analytical methods and numerical techniques. Simple theory of laminar and turbulent, free and forced convection and use of practical correlations. Basic thermal radiation concepts and applications.
- **System Dynamics & Control (MENG-4312):** Both in class and online settings. Dynamics systems, System response using Laplace transform and computer tools. Transfer function of linear systems. Linearization, Transient response analysis, Stability analysis, Basic control algorithms and structures, PID tuning methods, Time Domain Analysis, Frequency response analysis, Basic controller design methods and case studies.

Adjunct Faculty, **Texas Southern University (TSU)**

Spring 2017-Present @ Houston, TX

- **Engineering Graphics (ENGR-131):** Computer-aided drafting (CAD) using CAD software and sketching to generate two- and three-dimensional drawings based on the conventions of engineering graphical communication. The AutoCAD topics covered in this course include an introduction to AutoCAD features, starting and setting up drawings, point coordinate entry methods, creation of 2D objects, layer management, line types and colors, selection sets, object snap modes, editing geometry, display control and drawing inquiry methods. Introduction to GIS, and principles of MicroStation also be covered.
- **Structural Analysis (CIVE-338):** Study of determinate structures with emphasis on both the analytical and graphical approaches to trusses and building frames. To develop students' fundamental understanding of the principles of structural analysis, equilibrium and support reactions, shear and moment diagrams for beams and frames, plane trusses, deflection of beams, frames and trusses, analysis of cables, introduction to arches, introduction of statically indeterminate structures, introduce the student to available computational software used by engineers in applying matrix methods of structural analysis.

Senior Subsea Engineer, **McDermott International, Inc. (GAS Unlimited Inc.)**

November 2015 – April 2016 @ Houston, TX

- Structural analyses during Operation. Performed fabrication and installation support engineering. Wrote structural design report. Performed Buckling analysis. Interfaced with drafting department to design the skid. Prepared engineering estimates and engineering proposals. Checked blueprints and GD&T. Manufacturing/fabrication and machining monitored and supervised.

Senior Engineer, **Genesis Oil and Gas (Technip USA Inc.)**

October 2011 – August 2015 @ Houston, TX

- **Analysis performed:** FEA analysis of piping, production structures, skids etc. Analysis included: Operation, Dropped object, Fatigue calculations, and Piping Hydrotest. Performed hand calculations for environmental load on upper structure due to bottom current. Checked Vent sizing. Performed detailed analysis of Riser pipeline layout for wave, clamp force resistance, etc. using Caesar II pipeline software. Checked drawing and blueprints. Wrote Programming language using Ansys. Wrote Programming language (Python language) using Abaqus. Lathe, milling machine, welding are supervised. Visited and managed manufacturing/fabrication of structures to ensure structures following design, blueprints, GD&T.
- **Reports wrote:** Subsea Structures Design Report, Design Basis, Design Methodology, Functional Specifications, and Technical Note.

Post-Doctoral Researcher, **Center for Energy and Environmental Sustainability (CEES)**

July 2011-October 2011 @ Prairie View, TX

- Wind Turbine airfoil analysis. CFD simulations of aerodynamics flow over on twisted and tapered wind turbine blades and comparing with experimental results. Analyzed turbulent isothermal and incompressible airfoil flow using RANS, k-omega SST model. Optimization of blade profiles. Machining and fabrication are considered for blade manufacturing.

- Two publications, one travel award.

Adjunct Assistant Professor, **Prairie View A&M University (PVAMU)**

Spring 2011-May 2011 @ Prairie View, TX

- **Dynamic Systems and Controls (MCEG-4063):** The scope of this course includes mathematical modeling, analysis, and feedback control of dynamic systems. Topics include free and forced vibrations of single and multiple degrees of freedom systems. Transient, steady-state, and stability of linear feedback control systems are included in the course.
- **Measurement and Instrumentation Laboratory (MCEG-3011):** The scope of this course includes fundamentals in measurement theory, statistical analysis of experimental data, uncertainty, accuracy assessments, and calibration techniques. The course includes the use and applications of instruments for measuring area, pressure, time, speed, temperature, strain, hardness, and deflection.

Post-Doctoral Research Associate, **University of Pittsburgh (Funded by Westinghouse Electric Company)**

January 2010-January 2011 @ Pittsburgh, PA

- Analyzed laminar, isothermal, non-isothermal, incompressible and compressible single aerodynamics jet. Analyzed turbulent isothermal, non-isothermal incompressible and compressible single and triple aerodynamics jets mixing using RANS, k-epsilon Standard, k-epsilon Realizable, k-omega SST, Transition SST and LES modeling to mitigate metal fracture.
- Created, implemented, and maintained systems and documentations that were used to track status and location of related engineering documents. Responsible for design details, international codes and standards, procedures, and specifications.

Research Assistant, **Louisiana State University (Worked for NASA-EPSCoR)**

January 2008-December 2009 @ Baton Rouge, LA

- 2D and 3D Numerical and experimental analysis of fuel cells for carbon monoxide poisoning, adhesion in components, gas flow channel configurations design, liquid and gas simulation, thermal stress etc. Gained experiences on optics physics and microfabrication of silicon based materials by photolithography in CAMD (Center for Advanced Microstructures and Devices), Baton Rouge, LA. Microfeature structures have been analyzed by SEM. Have gained experiences on machine shop and tooling to manufacture components. Thermal and cost analysis of a fuel cell combined power generation system.
- One conference and seven journal papers publication.

Teaching Assistant, **Louisiana State University (LSU)**

August 2008-December 2008 @ Baton Rouge, LA

- Helped undergraduate senior year students conducting the lab.
- Static & Dynamic balancing experiment to understand the principles of static and dynamic balancing of rotating machinery.
- Controls experiment- cart with inverted pendulum to demonstrate proficiency for dynamic system modeling, compare dynamic responses of a mechanical system to well-known theoretical results.
- Vibration experiment to use the measured oscillations from a coupled oscillator to mathematically derive the values of the physical components used.
- Strain Gage Cantilever rod experiment to mount the strain gage and use the associated instruments to measure the strain, calculated the stress and compare the results with theory.
- The statistical nature of data to ensure that students properly represent the uncertainty in measured data.

Graduate Teaching Assistant, **Virginia Tech**

January 2007-August 2007 @ Blacksburg, VA

- Helped undergraduate senior year students conducting the lab (ME-4005), set up the lab.
- Redesign of a strain-gage mounted cantilever beam for the application of cleaning mines from shallow water
- Uncertainty analysis from measurement of cylinder shaped object
- Measurement of frictional torque of potentiometer in relation to coulomb friction

Graduate Research Assistant, **Virginia Tech (Worked for Ecolectrix)**

January 2006-December 2006 @ Blacksburg, VA

- CFD and experimental analysis of single and two-phase water transport in Fuel Cell. Saturation and porosity effect in porous gas diffusion layer with droplet dispersion at the interface of GDL-GFC. Thermal, structural as well as adhesion aspect have been considered during manufacturing of GDL (direct painting technique and wet proofing gas diffusion media process) of porous media for cathode and anode in fuel cell. Conducted seal leak tests to prevent leakage from fuel cell assembly. Weaved fragile pitch carbon fiber for fuel cells ribbons.

Teaching Assistant/Instructor, **Louisiana State University (LSU)**

August 2004-May 2005 @ Baton Rouge, LA

- Taught undergraduate students various thermal fluid simulations by using GAMBIT and FLUENT: Simulation of Flow inside an elbow, Flow over an airfoil, Laminar and Turbulent pipe flow, Compressible flow in a nozzle, Forced convection over a flat plate etc.

Research Assistant, Louisiana State University (LSU)

August 2004-December 2005 @ Baton Rouge, LA

- Design, Modeling and Testing of Fuel Cells. Designed simulation model for fuel cell that could be utilized in designing fuel-efficient engines and comparing with experimental results. Analyzed current and potential distribution for polarization curve in a unit cell. Thermal cooling for fuel cell has been considered. Solid hand on experience on designing Fuel Cell using Solidworks, Comsol, Fluent, Gambit etc. softwares have been used. Derived combined conduction, convection and radiation heat transfer related temperature distribution solution and find ways to avoid errors in thermocouple readings when measurements.
- Two conference publications, one journal paper.

Mechanical Engineer, Akij Cement Company

September 2002-June 2003 @ Narayanganj, BD

- Hands on experience obtained on trouble shooting of various machineries involve with cement manufacturing: pumps, piping, ball mill/grinding machine, bag filter, compressor station, chemical plant, and packing machine etc.
- On-site management of labors, mixture materials, and group scheduling. Participate in root cause failure analysis (RCFA) of chronic operational issues and incidents. Compiled list of lessons learned based on production activities.
- Performed pipeline network analysis which includes more than one miles of cooling water pipeline in addition to the pump station. Conceptualized initial design. Provided detail design of complex facilities and give guidance to a team of engineers and draftsmen. Involved with the designers in the development of 3D modeling work. Reviewed drawings, blueprint, and assisted with collection of design information required by construction and procurement.
- Performed initial field survey to determine optimum equipment layout, facility operations, and safety criteria. Supported maintaining budget, schedule, and adherence to the agreed scope of work. Performed vendor data review of equipment and components. Supported construction and procurement with preparation of drawings, blueprint, and MTO. Customer interactions with quality of works.

Research Assistant, BUET

September 2001-June 2002 @ Dhaka, BD

- Fabricated low lift wells pump with improved driving system. Conceptualized initial design during preliminary stage. Supported construction and procurement with preparation of drawings, blueprint, and MTO.
- Extensive experiences on machine shop and tooling obtained. Experienced related to equipment specifications.

Senior Design Research, BUET

August 2000-August 2001 @ Dhaka, BD

- Available drugs in the market were evaluated both qualitatively and quantitatively by UV Spectrophotometer, and then the calculated sample statistics were compared with the parameters reported in the drug labels in order to determine if any business practices were conducted to reduce the production cost of the drugs.

Mechanical Intern, Shahjibazar Gas Turbine Power Plant

May 2000-June 2000 @ Sylhet, BD

- Power generation monitoring, troubleshooting of various machines including compressors, blowers, pumps, turbomachinery, piping etc. used in generation of power. Interacted with the designer for preparation of 3D modeling. Reviewed drawings and assisted with collection of design information required by construction and procurement. Responsible for preparing and review of calculations, design drawings, blueprint, and other information.
- Provided support to operations, maintenance and management personnel to prepare natural gas distribution pipe networks. Customer satisfaction was ensured following quality works. Wrote daily inspection reports for gas generation activities on the plant.

Research and Industry Funds (Won)

- Forge Press design and structural integrity, Forged Components Inc (FCI), Humble, TX. September, 2015. Amount: \$5000
- Travel Allowances for attending Research Workshop in University of Massachusetts, Lowell, MA. Includes Registration fee, hotel and meals for the two nights of September 21 & 22, 2011, and airfare. Amount: \$650
- Faculty Mentor to design and implement own vision for a Gator Experience with Mentors (GEM) for UHD FTICs (First Time in College Students). Amount: \$1000/semester (Total: \$4000)

Research and Industry Funds (Submitted)

- Submitted proposal: DOE SBIR Phase I Application - High-Reliability Whole-Air Gas Compressor,

- Submitted proposal: Army SBIR Phase I Application - Development of a Stochastic Multi-dimensional Fire Modeling and Simulation Software Package, Technology Areas: Info Systems.

Training

- Fundamentals of Project Management, Houston, TX, 2013
- Communications with Diplomacy and Professionalism, Houston, TX, 2013
- Electronic Data Management Systems, Houston, TX, 2012
- ANSYS @ Houston, TX, 2011; SACS @ Houston, TX, 2014; Solidworks @ Baton Rouge, LA, 2004.

Work Permit

USA Permanent Resident/Green Card

Computer Skills

- Engineering Softwares: Ansys, Abaqus, STAR-CCM+, Fluent, OpenFOAM, AX, Comsol, Mathcad, Maple, Labview, EES etc.
- Engineering Drawing Software: Solidworks, AutoCAD, Autodesk Inventor, Unigraphics, Gambit, ICEM CFD.
- Languages: Fortran, Matlab.
- Operating Systems: Windows, Linux, DOS.

Professional Affiliations

- American Society of Mechanical Engineers (ASME);
- Society for Industrial and Applied Mathematics (SIAM);
- Bangladesh Society of Mechanical Engineers (BSME).

Professional Service

Conference Co-Chair, 4th Annual Graduate Student Conference, Mechanical Engineering Department, LSU, 9th April, 2005. Responsible for attracting new participants and arranging all logistical aspects of the most successful event to date.

Research Workshop Attended

Wind Turbine Research Workshop in University of Massachusetts, Lowell, MA, 09/22/11-09/23/11.

Honors & Awards

- Research & Teaching Assistantship, LSU, Baton Rouge, 2004-2005, 2008-2009
- Research & Teaching Assistantship, Virginia Tech, Blacksburg, 2006-2007
- Research Assistantship, BUET, 2001-2002
- University Merit Scholarships in undergraduate level, BUET, Bangladesh, 1997, 1999-2001
- Technical Scholarship, Dhaka Board, Bangladesh, 1996-2001

Research Presentations

- Engineering, Mathematics, and Physics Department, Texas A&M International University, Laredo, Texas, Feb 25, 2011 on the topic, "Applications of CFD (Computational Fluid Dynamics) in Energy"
- Mechanical Engineering and Materials Science Department, University of Pittsburgh, Pittsburgh, Pennsylvania, Oct 26, 2010 on the topic, "Turbulence Modeling"
- Mechanical Engineering department, Louisiana State University, Baton Rouge, Louisiana, 11th January, 2010, on the topic, "Experimental and Numerical Analysis of Fuel cells"
- Mechanical Engineering department, Virginia Tech, Blacksburg, Virginia, December 14, 2007, on the topic, "Analysis of Liquid and Gas Transport in Proton Exchange Membrane Fuel Cells"
- Mechanical Engineering department, Louisiana State University, Baton Rouge, Louisiana, September, 2005, on the topic, "Experimental and Numerical Study of Feeding Channel in Proton Exchange Fuel Cell."
- ASME International Mechanical Engineering Congress and Exposition, Nov 5-11, Orlando, Florida 2005, on the topic, "Effects of Feeding Configurations to Water Flooding and General Performance of a Proton Exchange Membrane Fuel Cell"
- ASME Summer Heat Transfer Conference, San Francisco, California. July 17-22, 2005, on the topic, "Simulations of Dimensional Effects in Solid Oxide Fuel Cell".
- 4th Annual Graduate Student Conference, April 9th, 2005, Louisiana State University, on the topic, "Simulations of Dimensional Effects in Solid Oxide Fuel Cell".

Journal Papers

- (1)CFD Analysis of a PEM Fuel Cell for Liquid Dispersion at the Interface of GDL-GFC, Hasan, A.B.M., Wahab, M.A. and Guo, S.M., International Journal of Numerical Methods for Heat & Fluid Flow, Vol.21, No.7, pp. 810-821, 2011,
- (2)Simulation of a proton exchange membrane fuel cell, Hasan, A.B.M., Guo, S.M., and Wahab, M.A., World Journal of Engineering (WJOE), Vol. 8, no. 2, pp. 109-116, 2011,
- (3)Single channel analysis of proton exchange membrane fuel cell, Hasan, A.B.M., Guo, S.M., and Wahab, M.A., International Journal of Green Energy, Vol.7, No.2, pp. 208-221, 2010,
- (4)Fuel Cell Performance Augmentation: Gas Flow Channel Design for Fuel Optimization, Hasan, A.B.M., Guo, S.M., and Wahab, M.A., Fluid Dynamics & Materials Processing (FDMP), Vol.5, No.4, pp. 399-409, 2009,
- (5)Modeling of a Proton Exchange Membrane Fuel Cell, Hasan,A.B.M., Guo, S.M., Wahab, M.A., World Journal of Engineering (WJOE), Special Edition on ICCE-17, Vol. 6, Supplement, 2009.
- (6)Analysis of Fracture in High-Temperature Vacuum Tube Furnace, Hasan, A.B.M., Guo, S.M., and Wahab, M A, Journal of Failure Analysis and Prevention, Vol.9, No.3, pp. 262-269, 2009,
- (7)Proton Exchange Membrane Fuel Cell High Carbon Monoxide Tolerance Operation using Pulsed Heating and Pressure Swing, Guo,S.M, Hasan,A.B.M., ASME Journal of Fuel Cell Science and Technology, Vol.6, No.1, pp. 011022-1-6, 2009,
- (8)Effects of Heat Affected Zones Temperature on the General Performance of High Temperature Vacuum Tube Furnace, Hasan, A.B.M., Wahab, M. A, and Guo, S.M., Structural Durability & Health Monitoring (SDHM), Vol.4, No.4, pp. 231-239, 2008,

Conference Proceedings

- (1)Taper and Angle of Attack Performance Comparison for Untwisted Blade Wind Turbine, Hasan, A.B.M., Huque, Ziaul, Harby, Donald, and Kommalapati, Raghava, ICME2011, 9th International Conference on Mechanical Engineering, December 18-20, 2011, BUET, Dhaka, Bangladesh, ICME11-FL-014.
- (2)Surrogate Models for Stall Regulated Wind Turbines for Improved Performance Predictions, Harby, Donald, ofuafor, Isaac, Huque, Ziaul, Hasan, A.B.M., and Kommalapati, Raghava, ICME2011, 9th International Conference on Mechanical Engineering, December 18-20, 2011, BUET, Dhaka, Bangladesh, ICME 11-RE-07.
- (3)Metal Surface Cleaning Using Electro-Plasma Process, David, R, Nettles, O, Liu, R, Hasan,A.B.M., Guo,S.M., and Wahab, M. A., Symposium of Fracture Mechanics of Welded Structures and Surface Coatings and Surface Cleaning Mechanics, First American Academy of Mechanics Conference, June 17-20, 2008, New Orleans, Louisiana, USA.
- (4)The Effects of Feeding Configurations to Water Flooding and General Performance of a Proton Exchange Membrane Fuel Cell, Hasan,A.B.M., Guo,S.M., and Ekkad, S.V., IMECE2005: ASME International Mechanical Engineering Congress and Exposition, Nov 5-11, 2005, Orlando, Florida, Vol. 45, pp. 429-435, 2005.
- (5)Simulations of Dimensional Effects in Solid Oxide Fuel Cell, Hasan, A.B.M., Ekkad, S.V., and Mensah,P., HT2005: ASME Summer Heat Transfer Conference, San Francisco ,California, USA. July 17-22, 2005, Advanced Energy Systems Division, AES, Vol. 4, pp. 11-16, 2005.

Community Service

- Raised money for Hokies United during April tragic incident in VT, on behalf of Association for Bangladeshi Students at Virginia Tech, 04/2007-05/2007
- Raised money and done volunteering service for Hurricane Katrina victims who took shelter in LSU campus, on behalf of Bangladesh Student Association at LSU (BSALSU), 08/2005-09/2005.

Extra-Curricular Activities

- Member, Association for Bangladeshi Students (Organization for promotion of Bangladeshi Classical Music and Culture) at Virginia Tech, 2006-2007
- Ex-President, Bangladesh Student Association at LSU (Organization for promotion of Bangladeshi Classical Music and Culture) from 08/2005-12/2005
- Student Member, BUET Photographic Society, Bangladesh, 1999-2001
- Student Member, Notre Dame Adventure Club, Bangladesh, 1992-1994
- Published short stories in Bangladeshi Magazines
- Played on various local community based soccer, cricket and chess tournaments.

Languages

English (fluent), Bengali (fluent), Hindi (beginner)